



COURSE SYLLABUS

Spring 2022

SPEECH AND HEARING SCIENCE

01:615:394:90

Classes begin **January 18, 2022** and end on **May 2, 2022**. The last day to drop this course without a “W” grade is **January 25th, 2022**.

Academic Calendar Directory: <https://academicaffairs.rutgers.edu/academic-calendar-directory>

You are advised to retain a copy of this syllabus in your personal files for use when applying for future degrees, certifications, or transfer of credit.

INSTRUCTOR INFORMATION

Instructor: Michelle Erskine, MS CCC-SLP
Email: me547@rutgers.edu
Office Hours: Tuesdays 11am – 12pm (or by appointment)

Communication:

Throughout the semester, I will communicate with you via either **Canvas Announcements** or your **Rutgers email account**. Please review the following link for [Accessing Rutgers Email](https://canvas.rutgers.edu/documentation/general/accessing-rutgers-email/):
<https://canvas.rutgers.edu/documentation/general/accessing-rutgers-email/>

GENERAL COURSE DESCRIPTION

Course Description:

In this course you will learn about the fundamentals of speech and hearing science. This course is designed to support students aspiring to careers or continued education in the field of speech-language pathology and audiology. In the topics included, you will develop an understanding of the basic physical properties of sound waves (or pressure waves) and describe perceptual correlates that are related to these sound properties (e.g., frequency/pitch, amplitude/loudness, wavelength/duration); learn about the anatomy and physiology of the speech production and hearing mechanism (e.g., structures and function of the laryngeal, respiratory, phonatory, articulatory and resonance systems and structures and function of the outer, middle, and inner ear); learn about the acoustics and perception of speech (e.g., source-filter theory, myoelastic theory of phonation, traditional and contemporary theories of speech perception, *inter alia*); and explain variability in these systems and mechanisms that occur as a function of age, gender,

and linguistic or cultural differences. Additionally, this course will provide you the groundwork for understanding the nature of speech production and perception at an anatomical and functional level from the perspective of typically developing individuals and persons with clinical disorders (e.g., neurological disorders, voice disorders, asthma, stuttering). Lastly, you will be given an opportunity to apply conceptual frameworks and comprehension of evaluation and treatment approaches to simple case studies related to the areas discussed above.

Prerequisite: 01:615:201 Introduction to Linguistic Theory

Course Modality:

This course is delivered **in fully online, asynchronous format**. To access the companion Canvas course site, please visit [Rutgers Canvas](https://canvas.rutgers.edu/) at <https://canvas.rutgers.edu/> and log in using your NetID.

Weekly modules are released every Monday at 8:00 am.

Learning remotely presents new challenges. For assistance with learning how to address these challenges, please consult the resources available here: https://rlc.rutgers.edu/remote_instruction.

For help guides and information about course access and support, contact [Canvas Help](#) at <https://canvas.rutgers.edu/canvas-help/>, via email at help@oit.rutgers.edu, or call 833-OIT-Help (833-648-4357).

Canvas site for Curriculum Committee Review: <https://rutgers.instructure.com/courses/154834>

MATERIALS

Required Texts:

- Ferrand, C.T. (2014). Speech Science: An Integrated Approach to Theory and Clinical Practice. Boston, MA: Pearson Education. ISBN-13: 978-0134481456| ISBN-10: 0134481453
- Additional readings will be provided throughout the course and uploaded to Canvas for ease of access, these readings will correspond to specific modules listed in your syllabus.

Additional Course Resources:

- Boersma, Paul & Weenink, David (2021). Praat: doing phonetics by computer [Computer program]. Version 6.1.51, retrieved 22 July 2021 from <http://www.praat.org/>
 - Praat [website](#) and introduction [tutorial](#)
- Anatomy & Physiology resource guides
 - **Neuroscience** for Kids, <http://faculty.washington.edu/chudler/neurok.html>, last updated on September 2, 2021.
 - OpenStax College. (2013). **Anatomy & physiology**. OpenStax. <http://cnx.org/content/col11496/latest/>, last updates on July 15th, 2021.
- Additional resources are linked in the “Additional Resources” segment of each module overview section.

Technology Requirements:

This course may require that you access online resources in the University’s Canvas site. Please review the following link for [Canvas Student Resources](#) for assistance on getting started in Canvas: <https://canvas.rutgers.edu/students/>

Additional Technical Requirements:

- **Expectations**
 - Basic proficiency navigating Microsoft Word Applications such as PowerPoint and Excel.
 - Basic proficiency using web browsers and navigating the Canvas website
 - Access to a Microsoft Word, Microsoft PowerPoint or similar software to complete assignments
- **Requirements**
 - Utilize VoiceThread and PlayPosit to access course content, complete required course assignments, and collaborate with peers.
 - Record audio through Praat and upload audio content to Canvas.
 - Record audio and video and upload content to the Canvas website
 - Use of a computer or laptop with high-speed internet connection. Suggested equipment includes: Mac (OS X) or PC (running Windows 7 or newer). *Note: Mobile devices, tablets/iPads may be used to view and upload some Canvas content, but will still provide very limited access to content. For example, software such as Praat which we will sometimes use in the class for demonstration purposes and assignment completion cannot be accessed on these devices.*
- Please visit the [Rutgers Student Tech Guide](#) page for resources available to all students. If you do not have the appropriate technology for financial reasons, please email Dean of Students deanofstudents@echo.rutgers.edu for assistance. If you are facing other financial hardships, please visit the Office of Financial Aid at <https://financialaid.rutgers.edu/>.

Publisher Content and Technology Tools Accessibility Statements:

- [Canvas accessibility statement](#)
- [VoiceThread accessibility statement and whitepaper](#)
- [Playposit accessibility statement](#)

STUDENT LEARNING OBJECTIVES

This course has been designed to meet **Speech and Hearing Science Course Knowledge and Skills Outcomes: ASHA Standard IV (2020 Standards)**. Course learning objectives are assessed through exams, discussion posts, an end of semester project, and warm up/checkpoint questions that are interwoven within each module.

By fully participating in this course, you should be able to:

1. Describe the relevant physical properties of sound waves and the instrumental methods used to visualize acoustic information. (*Standards IV-A, IV-B, IV-C*)
2. Utilize available, open-source sound analysis software and instruments to identify and describe the spectral and temporal elements of sound waves. (*Standards IV-B, IV-C*)
3. Describe the acoustic and spectral properties of American English vowels and consonants. (*Standards IV-B, IV-C*)
4. Identify, label, and describe anatomical and physiological (functional) properties of the speech and hearing mechanism subsystems (e.g., structural components that support respiration, phonation, articulation, and resonance). (*Standards IV-A, IV-B, IV-C*)
5. Relate understanding of how anatomical and physiological structures of the speech and hearing mechanism directly impact speech production and speech perception in typically developing individuals and across the lifespan. (*Standards IV-A, IV-B, IV-C*)

6. Describe assessment and treatment procedures associated with speech and hearing mechanisms among individuals with clinical disorders that impact speech production and speech perception. (*Standards IV-B, IV-C, IV-D*)
7. Evaluate research on dialect and accent variation and its influence on speech perception. (*Standard IV-C, IV-F*).
8. Describe modern and contemporary theories of speech production and perception and explain how this knowledge is used to support the field of speech-language pathology (Standard *IV-C, IV-F*)
9. Provide examples of the way in which factors associated with speaker and linguistic variability (e.g., dialect, age, and sex) influence speech production and the perception of the speaker's speech signal. (*Standards IV-B, IV-C*).

Department Learning Goals:

Students will be able to reason about language scientifically; demonstrate knowledge of cross-linguistic variability and universal patterns in language; evaluate a range of views on the nature, origin, and/or structure of language; and identify what someone knows when they know a language.

Majors and minors who complete the core courses in Linguistics will demonstrate technical mastery over the tools of linguistic analysis in syntax, phonology, semantics and pragmatics and apply linguistic theory in these areas. They will be able to investigate and analyze linguistic data; demonstrate strong problem-solving skills; extend their understanding of theoretical linguistics into other domains of linguistic research; apply the techniques of linguistics to new topics; and access current research in the field. *Source:* [Linguistics Department Learning Goals](#)

COURSE COMPLETION REQUIREMENTS

Although this course is fully online and asynchronous, your participation is essential and required in order to foster and cultivate an online community where we can engage in collective learning. This is a brief overview of your expected participation in this course:

- **Time commitment (a minimum of 9 hours per week)**
 - To be successful in this course, you should plan to dedicate approximately 9 hours per week. This estimate includes completing the modules, assignments and discussions, and the assigned readings for each module.
- **Accessing Canvas: At minimum, twice per week**
 - Modules open on Monday at 8 am and close on Sunday at 11:59 pm.
 - Warm-up activities are due on Wednesday at 11:59 pm.
 - Checkpoint questions are due on Sunday at 11:59 pm.
 - Discussion posts
 - Initial prompt post is due on Friday at 11:59 pm.
 - Response to a peer's post is due on Sunday at 12pm.
 - Please log into the course in Canvas each week, including University-acknowledged holidays or weeks with minimal online course activity. If there is a reason that arises that may prevent you from logging into class for the entire week, please contact the instructor as soon as possible. There is some degree of flexibility that can be provided, however, having a conversation with the instructor as soon as you can will be vital for providing additional support and accommodations. In other words, be proactive and not reactive. I am dedicated to supporting your success and learning in this course.
- **Office hours and live sessions: Optional**

- All office hours are optional. If the office hours presently listed on the syllabus conflicts with your schedule or if you require a separate meeting time to discuss course-related materials, please email the instructor to schedule a separate meeting.

GRADING

The instructional content of this course is dispersed across 15 weekly modules. Each module covers a specific topic, which is provided in the class schedule table below. It is strongly recommended that you complete the assigned chapter and/or research article reading before you begin each module. The readings were selected to provide you with sufficient background information to support you as you navigate the content and instructional material in each module.

At the start of each module, you will be directed to complete the warm-up activity before listening to lectures or engaging with the module content materials. This warm-up assists in setting up the thinking, learning, and hypothesis space for the weekly topic. After completing the warm-ups, there are online lectures and activities associated with each module. Each activity and lecture can be accessed on Canvas. The class schedule also includes all dates for weekly discussion posts, exams, and the mini project. For further information about the class structure and grading schema, see the information below.

Final Course Grade:

Grades in this course are weighted according to the table below.

<u>Assessments & Activities</u>	<u>Points and Grade %</u>
Unit Exams (<i>4 exams, 50 points each</i>)	200 points (50%)
Mini-Project (<i>1 project, 100 points total</i>)	100 points (25%)
Weekly discussion posts (<i>14 discussions, 5 points each</i>)	70 points (17.5%)
Module warm-up activities (<i>15 module warm-ups, 1 point each</i>)	15 points (3.75%)
Intra-module checkpoint questions (<i>15 module checkpoints, 1 point each</i>)	15 points (3.75%)
Module quizzes (<i>14 quizzes, 0 points each</i>)	<i>Not graded ** (See notes below) **</i>
<p>Total Points</p> <p><i>Additional notes about the grading scheme:</i> Your final grade will be calculated as a proportion and then converted to a percentage that will then be evaluated against the course grading scale.</p> <p>For example, if your final course score amounts to 300 points, then your grade will be computed as $300/400 = .75$ or (75%). This score aligns with a final grade of a C+ according to the course grading scale.</p>	400 points

The graded assignments that are weighted more heavily in this course consist of the unit exams and the course mini project. All other tasks contribute to your grade but are weighted less heavily; this includes the warm-up exercises at the start of each exercise and the checkpoint questions. The weekly quizzes are not graded but are an excellent way to assess your comprehension of the material across modules. You are highly encouraged to complete these as they will assist you with preparing for the unit exams, and you may encounter some of these questions on the actual exam.

Grading Scale:

Grade	Range
A	90 – 100
B+	85 – 89.9
B	80 – 84.9
C+	75 – 79.9
C	70 – 74.9
D	60 – 69.9
F	Below 60

Assessments and Activities:

1. **Unit exams:** (50% of your final grade)
 - a. 4 non-cumulative exams, each worth 50 points.
 - b. Each exam will be administered in a timed, take-home, open-book format. Although it is an open-book exam, you may not consult or collaborate with other students in the class to complete the exam.
 - c. The exams are designed to assess both the understanding and conceptual application of concepts. **You will be given 1 attempt to complete the exam in 75 minutes.** Once you've started the exam, you must finish the exam in the allotted time. You will not be given an opportunity to pause the exam or return to it at a later time.
 - d. **Exams open on Wednesday at 8am and closes on Saturday at 11:59pm.**
2. **Mini-Project:** (25% of your final grade)
 - a. This project is a group presentation worth 100 points. It will be uploaded to Canvas the last week of classes (see the Course Schedule for the exact date) so that you may view other groups' presentations and respond to or ask questions about your peers' work.
 - b. You will select 1 of 3 available case studies involving either a neurological, laryngeal, or respiratory disorder that directly impacts speech production or speech perception skills. You

will work in groups of 2-3 students to create a presentation that demonstrates the group's knowledge about the chosen disorder. All project presentation guidelines and rubric information can be found on the Canvas.

- c. In the presentation, you will describe ramifications to either speech production and/or speech perception subsystems (e.g., describe its symptomology and relevant markers of the disorder), expound on the assessment and treatment approaches that are typically used to address the disorder selected, and provide an insightful synthesis on expected prognosis of patients who received specific therapeutic procedures. This mini-project allows you to combine information acquired in the course in a cumulative manner, consult a variety of resources (e.g., textbook, lecture notes, current research articles), and apply conceptual knowledge to real world clinical case studies.
3. **Weekly discussion posts:** (7.5% of your final grade)
 - a. 14 discussions, each worth a total of 5 points
 - b. Each week, you will synthesize and expand your knowledge of the module-related topic area by answering a prompt or utilizing linguistic analytic tools in novel ways. The weekly discussions are designed to challenge you to apply the knowledge acquired through the readings, module content, and additional resources provided.
 - c. To achieve all 5 points, you are expected to answer the prompt and also respond to a peer's post by either adding further commentary, responding, or posing a question.
 - d. **Initial discussion posts are due on Fridays at 11:59pm and response posts are due on Sunday at 12pm.**
4. **Module warm-up activities:** (3.75% of your final grade)
 - a. 15 warm-up activities, each worth 1 point towards your final grade.
 - b. At the start of each module, you are expected to complete the warm-up activity related to the module's instructional content. The warm-up is graded as either **complete** or **incomplete**, as a form of participation and engagement in the course.
 - c. Each module warm-up is posted when the module is released on Monday at 8 am. Warm-ups must be completed by **Wednesday at 11:59pm**. You will also have the opportunity to view your peers' posts, though viewing or responding to your peers' warm-up post is not required for grading or completion.
5. **Intra-module checkpoint questions:** (3.75% of your final grade)
 - a. 15 weeks of checkpoint questions, each set worth 1 point towards your final grade.
 - b. As you explore and navigate your way through each module, there are a set of questions (e.g., multiple choice, fill in the blank, and short answer) that are designed to monitor comprehension and real-time synthesis of the information. Like the warmup activities, these will also be graded as either **complete** or **incomplete**, as a form of participation and engagement.
 - c. Checkpoint questions will help you assess your comprehension of the content as you complete each module, and it will signal to the instructor any topic areas that may require additional clarification.
 - d. Checkpoint questions will open when the module is released on Monday at 8am. Completion of all checkpoint questions is due prior to the release of the subsequent week's module (i.e., Sundays at 11:59pm).
6. **Module quizzes:** (0% of your final grade)
 - a. 14 quizzes are provided at the end of each module, with the exception of Module 12. The quizzes are not graded.
 - b. Quizzes are designed to help you prepare for the unit exams and monitor your understanding of the material. You will have unlimited opportunities to complete each quiz. These open on Monday at 8am and remain open through the duration of the semester.

POLICIES AND PROCEDURES

Attendance Policy:

As described above, you are expected to log in at least twice a week. However, in the event of an emergency that prevents you from doing this, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence, and contact the instructor directly.

Late Work:

- Regular course engagement will be evaluated through warm-up exercises, checkpoint questions, weekly discussions and all other class assignments.
- **For missing assignments:** Canvas automatically records a “0” for any assignment that has no submission once the due date passes. This scoring procedure can help you track your progress and grades in the course.
- **For late assignments:** Discussion posts, warm-up activities, and the miniproject must be submitted on or before the due date except in cases of emergencies. Late assignments will receive a 10% point deduction for each day past the due date. Late assignments will only be accepted without penalty if and only if students have contacted the instructor and coordinated a later submission date prior to the due date of the assignment. **Cautionary note:** It is not advisable for students to create a habit of late submissions as this degree of flexibility can be revoked at the instructor’s discretion.
- **Makeup exams:** Makeup exams will be given at the instructor’s discretion and only in cases where there is a verifiable medical excuse or equivalent.

Coursework Difficulties:

Please discuss any issues that you are having in completing the coursework on time with the instructor. I am available to talk this over with you by appointment.

Incomplete Policy:

If you are unable to complete the coursework during the semester due to some catastrophic event and/or issue, you must contact the instructor immediately to discuss your alternatives.

Academic Honesty and Plagiarism:

Students are expected to maintain the highest level of academic integrity. You should be familiar with the university [policy on academic integrity](#).

- Violations will be reported and enforced according to this policy.
- Use of external website resources such as Chegg.com or others to obtain solutions to homework assignments, quizzes, or exams is cheating and a violation of the University Academic Integrity policy.
- Cheating in the course may result in grade penalties, disciplinary sanctions or educational sanctions. Posting homework assignments, or exams, to external sites without the instructor’s permission may be a violation of copyright and may constitute the facilitation of dishonesty, which may result in the same penalties as plain cheating.

Many students do not realize that they infringe on the intellectual property rights of instructors or fellow students. Please review the description below to ensure that our academic community in this course understands the nuances of academic dishonesty.

Almost all original work is the intellectual property of its authors. These works may include syllabi, lecture slides, recorded lectures, homework problems, exams, and other materials, in either printed or electronic form. The authors may hold copyrights in these works, which are protected by U.S. statutes. Copying this work or posting it online without the permission of the author may violate the author's rights. More importantly, these works are the product of the author's efforts; respect for these efforts and for the author's intellectual property rights is an important value that members of the university community take seriously.

For more instructions on copyright protections at Rutgers University, please refer to the [Rutgers Libraries](#).

Additionally, I strongly encourage students to consult the following resources to learn more information about plagiarism and learn tips to prevent academic dishonesty.

- <http://academicintegrity.rutgers.edu/>
- <http://studentconduct.rutgers.edu/university-code-of-student-conduct/>
- <http://www.northwestern.edu/provost/policies/academic-integrity/cardinal-rules.html>

HONOR PLEDGE

All students will need to sign the Rutgers Honor Pledge on every major exam and assessment as below. In place of a digital signature, students will select a checkbox agreeing to the honor pledge at the start of each unit exam.

On my honor, I have neither received nor given any unauthorized assistance on this examination (e.g., unit exam, etc.).

STUDENT CODE OF CONDUCT

Students are required to adhere to the [University Student Code of Conduct](#) delineated in the Rutgers Student Affairs website [Student Conduct](#) page:

<http://studentconduct.rutgers.edu/student-conduct-processes/university-code-of-student-conduct/#1495568095620-2f5ce77d-17dd>

ACCOMMODATIONS

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the [Registration form](#) (<https://webapps.rutgers.edu/student-ods/forms/registration>).

ONLINE ETIQUETTE & COMMUNICATION GUIDELINES

As a community, we aim to create environments that are safe and transparent. As we share our opinions, beliefs, and pedagogical insights please remember that all experiences and opinions, no matter how different or controversial, are valid and must be respected for the purposes of academic discourse and dialogue. You are encouraged to comment or question ideas, but comments that are derisive, attacking, or harmful to others are not acceptable. In this course, we will unite as a community of learners who engage in challenging thinking but in a respectful and honorable manner.

Two primary modes of group communication

- **General community discussion forum:** In this space, created on Canvas, you will be able to communicate with your peers to ask clarification questions about the instructional materials or assignments. While it is encouraged that you view each other as resources, providing answers to assignment or exam questions (prior to grade distribution) or engaging in behaviors that violate academic integrity policies are ill-advised and will be penalized.
- **Weekly discussion posts:** In this space, you will apply concepts learned in each module to different research articles or prompts. This space provides opportunities for both inter-student communication and communication with the instructor in the course.

Online Communication Tips

Useful tips adopted from the University of Wisconsin-Stevens Point (see [resource](#) here):

- Be cautious in using Internet language. For example, all capital letters can be regarded as shouting or offensive behavior.
- Emojis (that are appropriate in a formal context) can be used to enhance or convey a message or communicate intent, but do not overuse them.
- Avoid using slang or informal language, as words may be misconstrued or misinterpreted.
- It is highly recommended that you support and uplift members of the course community (compliments and positive feedback are encouraged!)
- Keep an open-mind and confidently (yet respectfully) express your opinion -- even if it is not the prevailing opinion among other members in our learning community.
- Don't be hasty -- read, revise, and think about your post before you submit it.
- There is no such thing as too many questions. Do not hesitate to ask for feedback or clarification. If you're unsure of something, it is also likely that someone else is confused.
- Be yourself!

STUDENT SUPPORT SERVICES

Academic Services:

- For academic support visit Rutgers Academics Student Support at <https://www.rutgers.edu/academics/student-support>
- Any student can obtain tutoring and other help at the [Learning Centers](#) on each campus. Check the website at <https://rlc.rutgers.edu/>
- For coaching help with writing skills and assignments visit the [Writing Coaching](#) webpage at <https://rlc.rutgers.edu/student-services/writing-coaching>
- Many library resources are available online. Assistance is available through phone, email, and chat. For information, check the [Rutgers Libraries](#) website at <https://www.libraries.rutgers.edu/>

Rutgers Student Health Services:

Rutgers Student Health Services is dedicated to health for the whole student body, mind and spirit. It accomplishes this through a staff of qualified clinicians and support staff. Services are available at several locations throughout the New Brunswick-Piscataway area. For more information visit: <http://health.rutgers.edu/>

Veteran Services:

Rutgers is proud to support veterans. If you are a veteran of the armed forces, please visit the Office of Veteran and Military Programs and Services website for more information: <https://veterans.rutgers.edu/>

Links for Additional Rutgers Resources:

- [Resources \(from the Division of Student Affairs\)](#)
- [Student Success Essentials](#)
- [Student Tech Guide](#)

TOPICS SCHEDULE

<u>Weekly Schedule</u>	<u>Module Topic</u>	<u>Learning Objectives</u>	<u>Graded Assignments</u>	<u>Relevant readings and instructional materials</u>
Week 1 January 18 th , 2022	<p><u>Module 1:</u> Syllabus & Course Overview</p> <p>The nature of sound (Part I)</p> <p><i>Physical properties and perceptual correlates of sound waves properties & Acoustic resonance</i></p>	<ul style="list-style-type: none"> • Describe how sound is produced and transmitted through a medium (e.g., air) • Describe relevant physical properties of sound including frequency, period, amplitude, velocity, and wavelength • Describe the acoustic or perceptual correlates of the different sound properties (e.g., pitch, loudness, length/duration). • Identify and describe differences between pure tones versus complex sounds and aperiodic versus periodic complex sounds • Define resonance and and its relation to different types of filters 	<ul style="list-style-type: none"> • Warm-up activity • Checkpoint questions • Discussion post 	<p><u>Required readings:</u></p> <ul style="list-style-type: none"> • Chapter 1 (from Ferrand Textbook) • Tiwari, M. (2012). Speech acoustics: How much science? <i>Journal of natural science, biology, and medicine</i>, 3(1), 24–31. • Berg, F., Blair, J., & Benson, P. (1996). Classroom acoustics: The problem, impact, and solution. <i>Language, Speech, and Hearing Services in Schools</i>, 27, 16-20. <p><u>Supplementary resources:</u></p> <ul style="list-style-type: none"> • Soundwave interactive learning website • Learn more about Fast Fourier Analysis • How to read a research article: Advice from graduate students and young professionals • Purugganan, M. & Hewitt, J. (2004).

				<p><u>How to read a scientific article.</u> A guide released by Rice University.</p>
<p>Week 2 January 24th, 2022</p>	<p>Module 2 Introduction to Praat</p> <p>The nature of sound (Part II)</p> <p><i>Visually depicting soundwaves</i></p>	<ul style="list-style-type: none"> Describe how Praat can be utilized for spectrographic analysis and how its abilities are relevant to the field of speech-language pathology and audiology. Use Praat's basic functions to identify relevant components of sound waves and independently complete the following: a) isolate fundamental frequency and individual harmonics of sounds, b) measure the duration of a sound wave for a given vowel or word, c) toggle between waveform, spectral and spectrogram views of soundwaves, d) identify periodic vs. aperiodic elements of sound waves, d) generate a wide-band and narrow-band spectrogram. Describe the tools used to visualize acoustic information and the kinds of information that are identified across visual displays (e.g., spectra, waveforms, spectrograms) and the relative disadvantages/advantages 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post 	<p>Required readings:</p> <ul style="list-style-type: none"> Chapter 1 pages 23-24 (Ferrand) <u>Praat guide</u> developed by EDUHK <p>Supplementary resources:</p> <ul style="list-style-type: none"> <u>Intro to Praat Tutorial</u> by Boersma & Weenink (2021) <u>Openstax-Soundwaves</u>

		ges of each visualization method.		
Week 3 January 31 st , 2022	<p>Module 3: Respiration & Speech Breathing (Part I)</p> <p><i>Anatomy & Physiology</i></p> <p><i>Processes of Inhalation & Exhalation</i></p> <p><i>Speech-related vs. Life Breathing</i></p>	<ul style="list-style-type: none"> Label the structures of the pulmonary apparatus and chest wall system Identify the primary muscles of respiration Describe the processes of inspiration and expiration Contrast breathing that occurs for life-related activities and breathing for speech-related activities 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post 	<p>Required readings:</p> <ul style="list-style-type: none"> Chapter 2 p. 55-82 (Ferrand) <p>Supplementary resources:</p> <ul style="list-style-type: none"> <u>Lungs & respiratory system</u> <u>Get body smart</u> <u>The circulatory system</u> Open stax - (Section 7, The axial skeleton; Section11, The muscular system)
Week 4 February 7 th , 2022	<p>Module 4: Respiration & Speech Breathing (Part II)</p> <p><i>Developmental changes to the respiratory system</i></p> <p>Clinical Application : Assessment and Treatment of Respiratory Disorders</p>	<ul style="list-style-type: none"> Describe the changes in speech breathing patterns that are related to aging Describe the parameters of speech that influence speech breathing patterns Describe how spirometry measures are used in pulmonary function testing Label and describe the information provided by a flow-volume loop Describe the ways in which air pressure and air flows are measured and list two potential advantages and disadvantages of each measure 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post Exam 1 must be completed by Sunday 12pm 	<p>Require readings:</p> <ul style="list-style-type: none"> Chapter 2 & Chapter 3 (Ferrand) <p>Supplementary resources:</p> <ul style="list-style-type: none"> Open stax - the axial skeleton

		<ul style="list-style-type: none"> Describe the classification system that describes respiratory problems (e.g., obstructive, restrictive, etc). Characterize the nature of speech production difficulties that are linked to specific respiratory problems. Explain management principles that are important for treating and assessing speech production difficulties linked to respiratory dysfunction 		
<p>Week 5 February 14th, 2022</p>	<p>Module 5: Phonation & The Laryngeal System</p> <p><i>Anatomy & Physiology</i></p> <p><i>Myoelastic aerodynamic theory</i></p> <p><i>Developmen tal changes</i></p>	<ul style="list-style-type: none"> Describe the physiology and label the anatomical structures that comprise the larynx and the laryngeal skeleton Describe the components and layers of the vocal folds Ascribe the cover-body model to components of the vocal fold Identify the intrinsic and extrinsic muscles of the larynx and describe their functional properties in relation to phonation Explain the myo-elastic aerodynamic theory of phonation Explain differences in the laryngeal system that are attributed to 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post 	<p>Required Readings:</p> <ul style="list-style-type: none"> Chapter 4 (Ferrand) <p>Supplementary resources:</p> <ul style="list-style-type: none"> Sve, J.G., Schutte, H.K., Chen, C.J., T, I.R. (2021). Integrative insights into the myoelastic-aerodynamic theory and acoustics of phonation, <i>Journal of Voice</i>, <u>Open stax</u> (Section 22.1) - Organs and Structures of the Respiratory System

		<p>the aging process and the resulting vocal changes that can be expected</p> <ul style="list-style-type: none"> • Compare and contrast typical and atypical vocal quality • Describe the relationship between vocal fold vibration variability and vocal register 		
<p>Week 6 February 21st, 2022</p>	<p><u>Module 6:</u> Clinical Application : Assessment & Treatment of Phonatory Disorders</p> <p>Using Praat to extract measures of Jitter & Shimmer</p>	<ul style="list-style-type: none"> • Name and describe the acoustic measures that are evaluated during the assessment of phonatory function • Compare and contrast direct and indirect laryngeal visualization techniques (e.g., electroglottography, videostroboscopy) • Describe how acoustic and visual information is used to inform assessment and treatment of phonatory disorders or for individuals who request elective treatment services 	<ul style="list-style-type: none"> • Warm-up activity • Checkpoint questions • Discussion post 	<p><u>Required readings:</u></p> <ul style="list-style-type: none"> • Chapter 5 (Ferrand) • Sandage, M.J & Zelazny, S.K. (2004). Paradoxical vocal fold motion in children and adolescents, <i>Language, Speech, and Hearing Services in Schools</i>, 35, 353-362. • Kim, H. (2020). Vocal Feminization for transgender women: current strategies and patient perspectives. <i>International Journal of General Medicine</i>, 12, 43-52. <p><u>Supplementary resources:</u></p> <ul style="list-style-type: none"> • Schmidt (2001). Paradoxical vocal

				<p>fold motion: a tutorial on a complex disorder and the speech language pathologist's role. <i>Journal of Speech-Language Pathology, 10, 111-125.</i></p> <ul style="list-style-type: none"> • Leyns, C., Papeleu, T., Tomassen, P., T'Sjoen, G., & D'haeseleer, E. (2021). Effects of speech therapy for transgender women: A systematic review. <i>International Journal of Transgender Health, 21, 1-10.</i>
<p>Week 7 February 28th, 2022</p>	<p>Module 7: Articulation & Resonation</p> <p><i>Anatomy & Physiology</i></p> <p><i>Source-filter theory</i></p> <p><i>Classification System of Phonemes</i></p>	<ul style="list-style-type: none"> • Label anatomical structures of the vocal tract (oral, nasal, and pharyngeal cavity) and explain their function in speech production • Describe the traditional classification of consonants (manner, place, voicing) and vowels (vowel quadrilateral system) • Describe how the vocal tract serves as an acoustic resonator • Explain source-filter theory of vowel 	<ul style="list-style-type: none"> • Warm-up activity • Checkpoint questions • Discussion post 	<p><u>Required Readings:</u></p> <ul style="list-style-type: none"> • Chapter 6 (Ferrand) <p><u>Supplementary resources:</u></p> <ul style="list-style-type: none"> • Learn more about the source-filter theory here.

		<p>production and its 3 primary functional roles</p> <ul style="list-style-type: none"> Describe how connected speech differs from the production of individual phonemes 		
<p>Week 8 March 7th, 2022</p>	<p>Module 8: Clinical Application : Assessment & Treatment of Articulatory & Resonance Disorders</p>	<ul style="list-style-type: none"> Explain the importance of supplementary perception measures of speech intelligibility with instrumental measures Describe at least 3 instrumental measures that can be used to objectively quantify or evaluate speech production Identify potential clinical limitations associations affiliated with each of these instrumental methods Relate and apply the use of formant and spectral analysis in deciding on treatment procedures for individuals with articulation and resonance disorders that are attributed to neurological disorders, hearing impairments, speech sound disorders, cleft palate and stuttering Relate the application of kinesthetic measures in the evaluation and treatment of articulatory or resonance disorders in individuals with motor speech disorders Describe atypical speech production patterns observed among individuals with 	<ul style="list-style-type: none"> Exam 2 must be completed by Sunday at 12pm Warm-up activity Checkpoint questions Discussion post 	<p>Required Readings:</p> <ul style="list-style-type: none"> Chapter 7 (Ferrand) Stelck, E., Boliek, C., Hagler, P., & Rieger, J. (2011). Current practices for evaluation of resonance disorders in North American. <i>Seminars in Speech and Language, 32</i>, 58-68. <p>Supplementary Reading:</p> <ul style="list-style-type: none"> Kummer, A. (2014). Speech and resonance disorders related to cleft and velopharyngeal dysfunction: a guide to evaluation and treatment. <i>Perspectives on School-Based Issues, 18</i>, 10-18.

		a variety of communication disorders (e.g., cleft palate, stuttering, apraxia of speech)		
<p>Week 9</p> <p>March 21st, 2022</p>	<p>Module 9: The Auditory System</p> <p><i>Anatomy & Physiology</i></p> <p><i>Passage of Sound from Outer Ear to Auditory Nerve</i></p>	<ul style="list-style-type: none"> Identify the anatomical structures of auditory system Describe the function (physiology) of structures of the outer, middle, and inner ear Describe the function of the basilar membrane in relation to sound propagation and its tonotopic organization Describe how the passage of sound the hearing mechanism may differ among individuals with typical hearing and individuals with hearing impairment Explain the function of the auditory nerve and its relation to auditory pathways 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post 	<p>Required readings:</p> <ul style="list-style-type: none"> Chapter 8 (Ferrand textbook) <p>Supplementary resources:</p> <ul style="list-style-type: none"> Open stax - Learn more about the Auditory System here.
<p>Week 10</p> <p>March 28th, 2022</p>	<p>Module 10: Evaluation & Treatment of Disorders Related to Hearing Impairment</p>	<ul style="list-style-type: none"> Compare and contrast conductive and sensorineural hearing loss Learn to read a audiogram and map different patterns to types of hearing loss Describe the diagnostic procedures used to evaluate middle and inner ear function and auditory system integrity Describe the ways in which hearing loss 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post 	<p>Required readings:</p> <ul style="list-style-type: none"> Chapter 9 (Ferrand) Blamey, P., Sarant, J., Paatsch, L., Barry, J., Bow, C., Wales, R., Wright, M., Psarros, C., Rattigan, K., & Tooher, R. (2001). Relationships among speech perception, production, language, hearing

		<p>impacts speech perception and how the effects to speech perception are identified in clinical contexts</p> <ul style="list-style-type: none"> • Identify cochlear implant components • Explain the relationship between speech perception, hearing loss, and speech production/articulation and language and reading disability 		<p>loss, aged age in children with impaired hearing. <i>Journal of Speech, Language, and Hearing Research</i>, 44, 164-285.</p> <p><u>Supplementary Resources:</u></p> <ul style="list-style-type: none"> • Delage, H. & Tuller, L. (2007). Language development and mild-to-moderate hearing loss: does language normalize with age? <i>Journal of Speech, Language, and Hearing Research</i>, 50(5), 1300-1313. • Ching, T. (2015). Is early intervention effective in improving spoken language outcomes of children with congenital hearing loss? <i>American Journal of</i>
<p>Week 11 April 4th, 2022</p> <p>(Complete Module 11 & 12)</p>	<p><u>Module 11:</u> Speech Perception</p> <p><i>Theories of Speech Perception</i></p> <p><i>Speech Segmentation</i></p> <p><i>Perception of vowels vs. consonants</i></p>	<ul style="list-style-type: none"> • Explain the differences between a model and a theory • Articulate the functional goals of speech perception • Describe how the listener extracts acoustic “segments/chunks” from a continuous signal 	<ul style="list-style-type: none"> • Warm-up activity for Module 11 and 12 • Checkpoint questions for Module 11 and 12 • Discussion post (Module 11 ONLY) 	<p><u>Required Reading for Module 11:</u></p> <ul style="list-style-type: none"> • Chapter 12 (Ferrand) <p><u>Supplementary Resources for Module 11:</u></p> <ul style="list-style-type: none"> • Redford, M.A. (2019) Speech production from a developmental

	<p>Models & Theories of Speech Production</p>	<ul style="list-style-type: none"> • Explain the difference between how vowels and consonants are perceived • Summarize traditional and contemporary theories of speech perception • Apply basic understanding of speech perception theories to current issues in speech-language pathology • Describe the foundational theories and models of speech production • Describe how speech production theories have influenced speech language pathologists and their approach to clinical disorders related to speech production 		<p>perspective, <i>Journal of Speech, Language, and Hearing Research. Special Issue: Select papers from the 7th international conference on speech motor control, 29 August.</i></p> <ul style="list-style-type: none"> • Fowler, C. A., & Magnuson, J. S. (2012). Speech perception. In M. J. Spivey, K. McRae, & M. F. Joanisse (Eds.), <i>The Cambridge handbook of psycholinguistics</i> (pp. 3–25). Cambridge University Press.
	<p>Module 12:</p> <p>Part I: Dialect/acc ent variation and its influence on speech perception/ comprehension</p>	<ul style="list-style-type: none"> • Define dialect and accent variation • Relate aspects of dialect and accent variation to speech perception and intelligibility • Understand how cochlear implants can impact speech production and perception outcomes 		<p>Required readings</p> <ul style="list-style-type: none"> • Clopper, G., & Pisoni, D. (2002). Perception of dialect variation: Some implications for current research and theory in speech perception, <i>Indiana University Annals.</i>
	<p>Part II: Cochlear Implant Research and its influence</p>	<ul style="list-style-type: none"> • Describe the limitations of cochlear implants in being able to restore audition 		<ul style="list-style-type: none"> • Grieco-Calub, T..., Saffran, J., & Litovsky, R. (2009). Spoken word recognition in toddlers who use

	<p>on speech perception/comprehension</p>	<ul style="list-style-type: none"> Describe the ways in which language variation (e.g., dialect or accent) and hearing impairment relates to current topics and themes in the field of speech-language pathology 		<p>cochlear implants. <i>Journal of Speech, Language, and Hearing Research</i>, 52(6), 1390-1400.</p> <ul style="list-style-type: none"> Mattys, S.L., Davis, M.H., Bradlow, A.R., & Scott, S.K. (2012). Speech recognition in adverse conditions: a review. <i>Language and Cognitive Processes</i>, 27, 953-978. <p>No Supplementary Readings This Week</p>
<p>Week 12 April 11th, 2022</p>	<p>Module 13: The Nervous System</p> <p><i>Anatomy & Physiology of the Central Nervous System</i></p>	<ul style="list-style-type: none"> Describe and label the structural components of the brain including the cortex Explain the difference between cortical areas composed of grey vs. white matter Describe the components of neurons Explain how action potentials are generated 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post Exam 3 must be completed by Sunday at 12pm 	<p>Required Readings:</p> <ul style="list-style-type: none"> Chapter 10 (Ferrand) <p>Supplementary Resources:</p> <ul style="list-style-type: none"> Neuroscience for Kids Openstax- Learn more about Circulation and the Central Nervous System here.
<p>Week 13 April 18th, 2022</p>	<p>Module 14: The Nervous System</p> <p><i>Anatomy & Physiology of the Peripheral Nervous System, the</i></p>	<ul style="list-style-type: none"> Describe and label structural components of the brainstem, cerebellum, and spinal cord Label and describe the function of the cranial and spinal nerves Describe how blood is supplied to the brain, 	<ul style="list-style-type: none"> Warm-up activity Checkpoint questions Discussion post 	<p>Required Readings:</p> <ul style="list-style-type: none"> Chapter 10 (Ferrand) <p>Supplementary Resources:</p> <ul style="list-style-type: none"> Neuroscience for Kids Openstax- Learn more about

	<p><i>Bloody Supply System, and</i></p> <p><i>Motor Control Systems</i></p> <p><i>Nervous System</i></p> <p><i>Bloody Supply System</i></p> <p><i>Motor Control Systems</i></p>	<p>including the purpose of the Circle of Willis</p> <ul style="list-style-type: none"> • Label the arteries that comprise the Circle of Willis • Describe the motor control systems that are involved in speech production (e.g., upper and lower motor neurons/feedback and feedforward concepts) 		<p>Circulation and the Central Nervous System here.</p>
<p>Week 14</p> <p>April 25th, 2022</p>	<p>Module 15: Clinical Application : Brain Imaging (Assessment & Treatment of Neurological/Nervous System Disorders)</p>	<ul style="list-style-type: none"> • Describe the advantage of housing brain imaging techniques to research and assess individuals with disorders related to the nervous system • Compare techniques used to visualize and capture images of brain function • Describe the clinical utility of brain imaging techniques areas such as Parkinson’s disease, eAlzheimer’s disease, aphasia and multiple sclerosis 	<ul style="list-style-type: none"> • Warm-up activity • Checkpoint questions • Discussion post 	<p><u>Required Readings:</u></p> <ul style="list-style-type: none"> • Chapter 11 (Ferrand)
<p>Last Day of Class</p> <p>May 2nd, 2022</p>	<p>NA</p>	<p>NA</p>	<ul style="list-style-type: none"> • Mini Project Presentation is due today (May 2nd 2022 at 11:59p) 	<p><u>Required Readings:</u></p> <p>NA</p>

Final Exam Week May 9 th , 2021	NA	NA	Exam 4 must be completed by Friday at 11:59pm	Required Readings: NA
---	----	----	--	---------------------------------

ASSESSMENT RUBRICS

Rubrics for the weekly discussions and mini project can be found on Canvas.

OVERVIEW OF SCHEDULE & DUE DATES

Week	Due dates of relevant assignments
Week 1 January 18 th , 2022	<ul style="list-style-type: none"> • Warm up activity due 1/19/2022 • Discussion posts <ul style="list-style-type: none"> ○ Initial post due 1/21/2022 ○ Response post due 1/23/2022 • Checkpoint questions due 1/23/2022
Week 2 January 24 th , 2022	<ul style="list-style-type: none"> • Warm up activity due 1/26/2022 • Discussion posts <ul style="list-style-type: none"> ○ Initial post due 1/28/2022 ○ Response post due 1/30/2022 • Checkpoint questions due 1/30/2022
Week 3 January 31 st , 2022	<ul style="list-style-type: none"> • Warm up activity due 2/2/2022 • Discussion posts <ul style="list-style-type: none"> ○ Initial post due 2/4/2022 ○ Response post due 2/6/2022 • Checkpoint questions due 2/6/2022
Week 4 February 7 th , 2022	<ul style="list-style-type: none"> • Warm-up activity due 2/9/2022 • Discussion post <ul style="list-style-type: none"> ○ Initial post due 2/11/2022 ○ Response post due 2/13/2022 • Checkpoint questions due 2/13/2022 • Exam 1 must be completed by Sunday (2/13/2022) at 12pm
Week 5 February 14 th , 2022	<ul style="list-style-type: none"> • Warm up activity due 2/16/2022 • Discussion post <ul style="list-style-type: none"> ○ Initial post due 2/18/2022 ○ Response post due to 2/20/2022 • Checkpoint questions due 2/20/2022
Week 6 February 21 st , 2022	<ul style="list-style-type: none"> • Warm up activity due 2/23/2022 • Discussion post <ul style="list-style-type: none"> ○ Initial post due 2/25/2022 ○ Response post due 2/27/2022 • Checkpoint questions due 2/27/2022
Week 7 February 28 th , 2022	<ul style="list-style-type: none"> • Warm up activity due 3/2/2022 • Discussion post <ul style="list-style-type: none"> ○ Initial post due 3/4/2022

	<ul style="list-style-type: none"> ○ Response post due 3/6/2022 ● Checkpoint questions due 3/6/2022
Week 8 March 7 th , 2022	<ul style="list-style-type: none"> ● Warm-up activity due 3/9/2022 ● Discussion posts <ul style="list-style-type: none"> ○ Initial post due 3/11/2022 ○ Response post due 3/13/2022 ● Checkpoint questions due 3/13/2022 ● Exam 2 must be completed by Sunday (3/13/2022) at 12pm
Week 9 March 21 st , 2022	<ul style="list-style-type: none"> ● Warm up activity due 3/23//2022 ● Discussion posts <ul style="list-style-type: none"> ○ Initial post due 3/25/2022 ○ Response post due 3/27/2022 ● Checkpoint questions due 3/27/2022
Week 10 March 28 th , 2022	<ul style="list-style-type: none"> ● Warm-up activity due 3/30/2022 ● Discussion posts <ul style="list-style-type: none"> ○ Initial post due 4/1/2022 ○ Response post due 4/3/2022 ● Checkpoint questions due 4/3/2022
Week 11 April 4 th , 2022	<ul style="list-style-type: none"> ● Warm-up activities for Modules 11 & 12 due 4/6/2022 ● Discussion posts (<i>Module 11 ONLY</i>) <ul style="list-style-type: none"> ○ Initial post due 4/8/2022 ○ Response post due 4/10/2022 ● Checkpoint questions for Modules 11 & 12 due 4/10/2022
Week 12 April 11 th , 2022	<ul style="list-style-type: none"> ● Warm-up activity due 4/13/2022 ● Discussion posts <ul style="list-style-type: none"> ○ Initial post due 4/15/2022 ○ Response post due 4/17/2022 ● Checkpoint questions due 4/17/2022 ● Exam 3 Must be completed by Sunday (4/17/2022) at 12pm
Week 13 April 18 th , 2022	<ul style="list-style-type: none"> ● Warm-up activity due 4/20/2022 ● Discussion posts <ul style="list-style-type: none"> ○ Initial post due 4/22/2022 ○ Response post due 4/24/2022 ● Checkpoint questions due 4/24/2022
Week 14 April 25 th , 2022	<ul style="list-style-type: none"> ● Warm-up activity due 4/27/2022 ● Discussion posts <ul style="list-style-type: none"> ○ Initial post due 4/29/2022 ○ Response post due 5/1/2022 ● Checkpoint questions due 5/1/2022
Last Day of Class May 2 nd , 2022	<ul style="list-style-type: none"> ● Mini Project Presentation is due Monday (5/2/2022) at 11:59 pm
Finals Week	<ul style="list-style-type: none"> ● Exam 4 must be completed by Sunday (5/13/2022) at 11:59pm